

**White Paper**  
**Visitor Trips to the Walter Reed National Military Medical Center**  
**Purple Line AA/DEIS**  
**Maryland Transit Administration**

Introduction

The Maryland Transit Administration has received comments from community leaders on the potential impacts of the Base Realignment and Closure (BRAC) Plan and the potential selection of the Jones Bridge Road alignment to address traffic concerns. Earlier this year the MTA issued a report identifying potential riders on the Purple Line resulting from BRAC employment shifts based on geographic analysis of home locations for employees currently working at Walter Reed. The findings of that report indicated that ridership would not be greatly increased due to the dispersion of employee home locations and the limited number of employees that are within the identified Purple Line service area.

This report is issued as an addendum to that earlier report and details analysis of the impact of the over one million annual visitor trips to the combined facility after it opens in 2011.

BRAC Background

The relocation of Walter Reed Army Medical Center (WRAMC) in Washington, DC to National Naval Medical Center (NNMC) in Bethesda, MD is part of a congressionally mandated defense base realignment and closure (BRAC) plan. This relocation will result in the new Walter Reed National Naval Medical Center (WRNNMC), which will merge tertiary care (inpatient services of a complex nature) and primary care services such as family health care, with services existing at NNMC. It will also serve as teaching hospital for graduate and post-graduate educational programs.

Accommodating the new services at the new WRNNMC involves the construction and possible demolition of facilities. These facilities will support various inpatient and outpatient services with an added focus on cardiological and neurological traumas. Facilities are also being planned to provide additional administrative offices; transitional housing for military patients, their families, and supporting aftercare staff; a fitness center; and additional parking. While there are ongoing plans for other construction on the existing NNMC site—an on-site day care and expansion of the naval lodge and naval exchange facilities—they are not part of the BRAC activities being addressed by the NEPA process.

NEPA Process Findings

The Department of the Navy published the Final Environmental Impact Statement (FEIS) for WRNNMC in March 2008. The study considered three alternatives. Two alternatives have similar designs, differing in the construction or demolition of certain facilities within the base differs, thus affecting internal circulation. The third alternative is the no-build option, giving baseline conditions for the study area without the base relocation. The FEIS, however, only considered the first two alternatives because the only way to implement the no-build alternative is to change the congressional law for BRAC activities.

*Trip generation and estimation for employees*

NNMC staff used a conservative estimate of 2,500 employees relocating to the new WRNNMC because of BRAC activities. An actual estimate of 2,200 more closely represents the employee transition to the new WRNNMC; this comprises 1,750 employees from WRAMC and 450 new support and maintenance staff.<sup>1</sup> The conservative value, however, accounts for additional staff that may locate to the base because of ongoing or future on-base projects. For example, the three on-base projects previously mentioned will add 136 employees to the site. Off-base projects, which were not included in transportation impact analyses for the FEIS, should not add additional staff.

NNMC staff expects some employees to arrive on base during non-peak hours or use the transitional housing on base. This information affects the AM and PM peak-hour calculations, but has no significant impact on estimated daily trips made by employees. The FEIS study assumed that all of the conservatively estimated 2,500 employees entered and left WRNNMC each day, giving an employee trip estimate of 5,000 per weekday.

#### *Trip generation and estimation for visitors and patients*

The FEIS gives detailed explanations of trip generation methodology and calculation of trips made by visitors and patients. The report references ITE's *Trip Generation Informational Report—Seventh Edition*<sup>2</sup> to determine the number of daily trips based on a combination of three land use types: hospital, military base, and research and development facility. The study also applied a trip reduction factor of 15%<sup>3</sup> to account for those visitors and patients traveling by transit. This reduction, however, only applies to trips occurring during the AM or PM peak hours. Although the study derived trips based on the number of employees, the counts also include trips made by visitors, patients, and other users.

NNMC staff estimates an additional 484,000 annual visitors and patients to the future WRNNMC. Average daily travelers range from 1,692 (for weekday and Saturday appointments) to 1,862 (for weekday appointments only). Using the latter value as a conservative estimate and assuming most appointments will be made on weekdays, NNMC determined 3,760 daily trips (1,880 incoming and 1,880 outgoing trips) will be generated by WRNNMC. Assuming 260 annual weekdays (52 weeks/year \* 5 weekdays/week), 977,600 additional trips are expected to be made by visitors and patients annually.

#### *Traffic Impacts and Mitigation Recommendations*

A forecast of traffic surrounding NNMC to Year 2011 shows that the BRAC relocation will cause a noticeable increase to intersection volumes. Five intersections will come close to level-of-service (LOS) failure or exceed LOS F because of the projected peak-hour traffic. Four of these intersections will fail, even in the absence of the base relocation. The most significant impact that is directly attributable to the relocation will be at the intersection of Rockville Pike and North Drive: its critical lane volume (CLV) will exceed the current threshold, going from 1504 to 1605 vehicles (threshold is 1600). CLVs of other intersections will also experience increases above their current levels. These

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<sup>1</sup> David "Ollie" Oliveria, BRAC Program Manager, NNMC Bethesda

<sup>2</sup> The estimates derived from the informational report are based on land uses in suburban areas offering little to no transit service, pedestrian amenities, or TDM programs.

<sup>3</sup> This transit mode share is a conservative estimate that Maryland-National Capital Park and Planning Commission (M-NCPPC) recommended for use in the EIS.

increases will not cause those intersections to fail, but regular commuters will notice the growth in traffic.

The FEIS offers several recommendations for mitigation measures to offset the impending traffic impacts. Some external mitigation measures include adding additional turn lanes or lengthening turn lanes to accommodate increased automobile traffic at surrounding intersections. The FEIS also recommends studies for traffic signals to see if certain intersections warrant their installation. Internal mitigation measures include performing additional studies at the NNMC gates to improve safety and security, reducing queues on and off base, and reducing damage to security stations. The Maryland State Highway Administration is currently conducting a study to determine potential mitigation strategies at study area intersections.

The Bethesda location of NNMC facilitates travel by public transportation for many of its employees and visitors. Its location is also more directly accessible by transit (via the Red Line) than the current location of WRAMC in the District of Columbia. For these reasons, the Navy expects more people to use transit to access the new WRNNMC than WRAMC. The Navy has also committed to continue its efforts to reduce single-occupancy-vehicle (SOV) travel to the new WRNNMC. Currently, NNMC has a transportation coordinator to help implement transportation management programs for its employees. Furthermore, the FEIS recommends numerous transportation-demand-management measures to reduce the peak hour impacts of SOVs to the area.

One recommendation for improvement from the FEIS pertains to transit and involves investigating the feasibility of a pedestrian connection between the Medical Center Metrorail station and NNMC to reduce pedestrian and vehicle conflicts along Rockville Pike near NNMC's south gate. Various alternatives for improving this connection, including grade-separated (above or below ground) pedestrian crossings, are currently under study by the Washington Area Metropolitan Transit Authority.

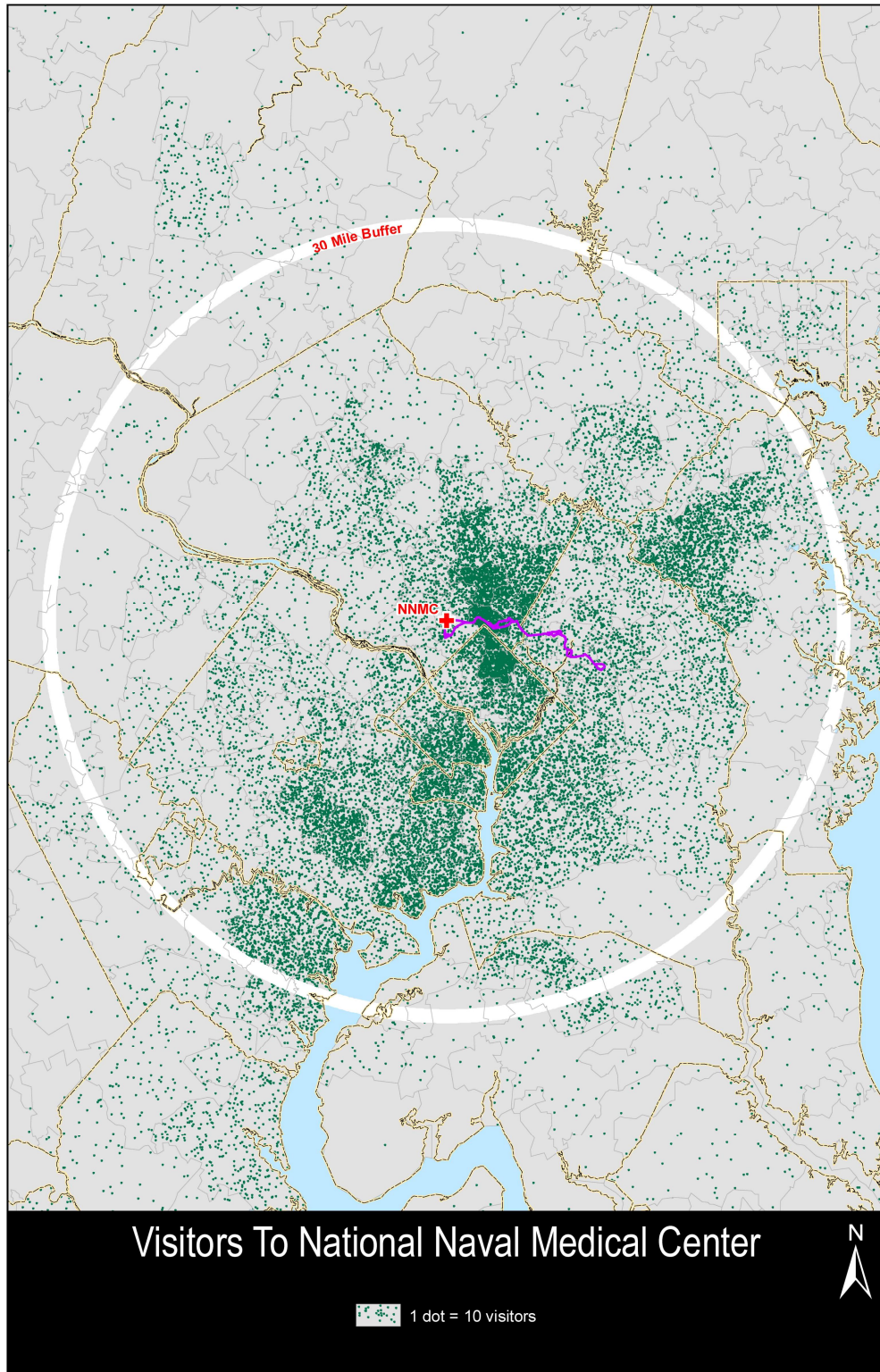
Additionally, the Bethesda-Chevy Chase Master Plan called for increased feeder bus service, especially in the eastern portion of the master plan's study area. Another recommendation is for fringe parking that will offer about 750 spaces at locations surrounding NNMC and the Bethesda central business district to intercept automobiles traveling to the area. M-NCPPC staff has already identified two parcels of land that could accommodate up to 250 parking spaces to implement this traffic control measure. A final recommendation is to reserve parking at existing and new park-and-ride locations for employees of the combined facility. Plans call for these off-site facilities along the routes of future transit corridors, including the Purple Line. Shuttles can also include these lots in their schedules for locations that are not easily accessible to transit.

#### Background on Data Sources

In an effort to determine the total number of visitors and patients that could be expected to use the combined medical facility via the Purple Line the MTA contacted representatives from both the existing NNMC and Walter Reed facilities to identify data resources that may be available. Representatives from NNMC were able to supply a data base of approximately 460,000 home addresses indexed by zip code for existing visiting patients to the facility. This database was reviewed and it was determined that patients represent the primary pool of those coming to the facility daily; actual visitors (contractors, employee visitors, patient visitors) were a very small fraction of the overall number.

The map depicted in Figure 1 denotes the distribution of home locations for visitors to National Naval Medical Center.

**Figure 1 - National Naval Medical Center Annual Visitors - Home Locations**



A few notes from the analysis of the supplied data:

- 350,000 of the annual trips noted in the database were for trips from within 100 miles (assumed to be daily trips).
- 308,000 annual trips were from within 30 miles (shown on the map).
- By far the largest percentage (10%) was for military personnel stationed at Walter Reed who traveled from that facility to NNMC for medical care.

Further discussions with NNMC personnel<sup>4</sup> on data collection methods and noted issues with the geographic distribution of the data points led to the clarification of the following:

- The geographic area for care at NNMC includes an area from Philadelphia to central Virginia to West Virginia. The majority of trips are short (< 100 miles) trips from regional locations.
- Many of those noted with addresses over 100 miles distant from the facility are most likely recent military transfers to the Washington area who have not yet completed the process to change their home address and provided identification listing older home locations.

Further clarification on the availability of on-base accommodations was requested as this could affect the estimate of the number of patients traveling daily to the facility who might access the facility via Purple Line transit – i.e. those that would be expected to stay in hotels or points off-site to access the facility. A summary of expected on-base accommodations for patients and visitors after BRAC improvements are made includes:

- The Navy Lodge – a hotel for visiting military personnel. This 106 room facility is currently fully-occupied most nights. The Lodge is expecting to expand to 300 rooms to accommodate future demand. The Lodge also accommodates military personnel who travel to Bethesda to visit the sites, but preference is maintained for patients.
- There are currently 15 rooms available for family members of military personnel (Fisher Houses) who are visiting patients at the facility. The number of facilities is being expanded to 42 rooms to meet increased demand.
- There will be 323 non-hospital rooms available to military patients who require long-term care or are receiving treatment for injuries that require longer stays.

There are then approximately 450 rooms available nightly to accommodate the visitor/patients who are expected to be on-site at the expanded facility or who have business on base or, in the case of the Navy Lodge, are visiting the area. This is in addition to the total number of hospital beds at the facility and other lodging available for military personnel working at the facility. It was noted in conversations with base personnel that higher level of demand for facilities is a direct result of military activity.

In conversations with base personnel it was also noted that parking on the facility is free for visitors. The impact of this condition was not addressed or quantified in this report – however it would be expected that it would affect trip decision-making for those traveling to the base for medical care.

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<sup>4</sup> Jeffrey Miller, Brian Hillis, Roberta Williams - NNMC

### Analysis Methodology

After it was determined that the database was an appropriate estimator for future conditions the study team derived an analysis methodology by which to determine expected contributions from visitor/patient trips to Purple Line travel estimates.

The chosen analysis methodology used to determine the potential range of daily visitors to the combined WRNNMC facility who would use the Purple Line included the following basic steps:

- Define the geographic distribution of current visitors to the NNMC facility.
- Assume a similar geographic distribution for future trips at the combined facility as are noted for current visitors.
- Geographically “grow” the number of existing visitors to reflect the total number of visitors expected to the facility on an annual basis.
- Calculate the resulting annual number of visitors who would be expected to utilize the Purple Line as a way to access the facility.
- Reduce the annual number to a daily number to identify the impact to daily travel on the Purple Line.

To conduct an analysis to yield results that would be appropriate for this level of generalized by analysis a broad assumption was made to determine a potential trip reduction for visitors/patients staying on-site. A rough estimate of 100,000 annual patients and visitors were assumed to be overnight stays – a very conservative (low) occupancy rate (385 visitors/patients per day would be assumed to stay on base) for future on site hospital and non-hospital facilities as a conservative estimate.

Results of the analysis to derive an estimate of trips that could be expected to originate in the Purple Line service area are presented in Table 1 below.

**Table 1 - Analysis of Expected Future Visitor Trips to WRNNMC**

<b>Analysis of Visitor Trips to WRNNMC after BRAC</b>		
<b><i>Existing Conditions:</i></b>		
Good Records - Existing Trips to Facility w/in 100 miles	300,000	
Number of Trips Determined to be within Purple Line Service Area	13,700	
Percentage trip total to NNMC from within PL service area	4.60%	
<b><i>Post - BRAC</i></b>		
Future Annual Visitors (combined)	940,000	
Overnight Visitor Reduction	100,000	
Total Pool of Transit Eligible Visitor Trips	840,000	
Assumed Origins from Within PL service area	38,640	4.60%
Daily Visitors - Purple Line access (260 visitor days)	149	
Total Daily Trips (100% Transit Trips from w/in PL service area)	297	High
Daily Trips - 50% Transit Trips from w/in PL service area	149	Medium
Daily Trips - 30% Transit Trips from w/in PL service area	89	Low

### Conclusion

MTA analysis of potential visitor trips to the combined facility after BRAC actions have been fully implemented was conducted using methods to assume the highest possible figure for riders. Conservative methods applied to trip origin location, military personnel

access and overnight stays were utilized. Using this method it has been assumed that the maximum number of visitors expected to potentially utilize the Purple Line would be 149 daily.